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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,772	12/05/2003	Jiangang Sun	S-101,670	4707

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UNITED STATES DEPARTMENT OF ENERGY  
1000 INDEPENDENCE AVENUE, S.W.  
ATTN: GC-62 (CHI), MS 6F-067  
WASHINGTON, DC 20585-0162

EXAMINER

RATCLIFFE, LUKE D

ART UNIT PAPER NUMBER

3662

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/731,772

Applicant(s)

SUN, JIANGANG

Examiner

Luke D. Ratcliffe

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 December 0200.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION*****Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "80" has been used to designate both personal computer and the laser-scan unit. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: figure 2 Ref 80 and 52. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not

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accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 17. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, 6, 7, 9, 10, and 13-17 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Ellingson (5689332).

Referring to claim 1 and 10 Ellingson shows a means for producing a first illumination (figure 1 Ref 12), a means for measuring light intensity (figure 1 Ref 36), a means for allowing the position of the sample to change (figure 1 Ref 18), a means for producing a second illumination (column 5 lines 5-27), a means for measuring the second light intensity (figure 1 Ref 36), a means for comparing the emanating light (column 6 and 7), a stage that is movable and orientable in one or more directions (figure 1 Ref 18), a means to deflect initial beam towards a spot on a sample (figure 1 Ref 20), and a means to select light emanating from said illumination (figure 1 Ref 20).

Referring to claim 2 Ellingson shows an illuminating light that is provided by a laser (figure 1 Ref 12).

Referring to claim 4 Ellingson shows multiple positions and orientations of the sample wherein the emanating light intensity is measured (column 5 lines 5-27 and column 6 and 7).

Referring to claim 6 Ellingson shows an optical detector assembly (figure 1 Ref 36).

Referring to claim 7 Ellingson shows a laser scan system to redirect to successive spots on the sample (column 2 lines 20-62 and figure 1)

Referring to claim 9 Ellingson shows a sub-surface micro-structure that is detected through enhancement of light intensity emanating from the material with said second direction of polarization (column 1-4).

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Referring to claim 13 Ellingson shows a deflection means and a selection means that are combined in a polarized beam splitter (figure 1 Ref 20).

Referring to claim 14 Ellingson shows a pinhole optical detector assembly (figure 1 Ref 36 and 36a)

Referring to claim 15 Ellingson shows an initial beam, deflecting means, selecting means, moving means, orienting means, and measuring means that are held in a fixed relation with respect to each other (figure 1).

Referring to claim 16 Ellingson shows a means to redirect the deflected beam to successive spots on the sample by a laser scan system (figure 1 and column 6 and 7), and a means to compare the emanating light intensity from said successive spots (column 6 and 7).

Referring to claim 17 Ellingson shows a means to compare the emanating light intensity from successive illuminations when the location and orientation of the illumination on the sample is changed from the first location and orientation (column 6 and 7).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 3, 5, 11, 12, and 18-20 rejected under 35 U.S.C. 103(a) as being unpatentable over Ellingson (5689332) in view of Ellingson (6285449) and Haga (5745236).

Referring to claim 3 and 11 Ellingson (6285449) shows a polarization-maintaining optical fiber that emanates illuminating light (figure 1a). Haga shows a point source that could use the polarization-maintaining optical fiber (Haga figure 1). It would have been obvious to modify Ellingson (5689332) to include the optical fiber taught in Ellingson (6285449) and the point source taught by Haga because this is a common way to create a light source and if the light is polarized then the polarization of the light must remain intact.

Referring to claim 5 Haga shows an illuminated light that is expanded by a lens and Ellingson (5689332) as modified shows emanating light traverse a polarize beam splitter (Ellingson (5689332) figure 1 Ref 20). It would have been obvious to modify Ellingson (5689332) to include the lens taught by Haga because when using a point source a lens is commonly used to expand the beam.

Referring to claim 12 Haga shows an initial beam that is expanded by a first lens (figure 1 Ref 25), Ellingson (5689332) as modified shows a focused beam on the sample by a second lens (Ellingson (5689332) figure 1 Ref 22), and said light emanating from the sample is focused on said measuring means by a third lens (Ellingson (5689332) figure 1 Ref 30). It would have been obvious to modify Ellingson (5689332) to include the first lens taught by Haga when using a

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point source because this allows the light emanating by the point source to be expanded.

Referring to claim 18 Ellingson (5689332) as modified shows a laser producing a beam of light (Ellingson (5689332) figure 1 Ref 12), an optical fiber transmitting said beam (Ellingson (6285449) figure 1 Ref 60), a first lens expanding said beam (Haga figure 1 Ref 25), a stage supporting said sample Ellingson (5689332) figure 1 Ref 18), a second lens collecting the scattered light and directing it to the polarized beam splitter (Ellingson (5689332) figure 1 Ref 22), a polarized beam splitter (Ellingson (5689332) figure 1 Ref 20), and a third lense for focusing transmitted light through a pinhole (Ellingson (5689332) figure 1 Ref 30).

Referring to claim 19 Ellingson as modified shows successive spots on the sample scanned by the laser scan system (column 5 lines 5-27, column 6 and 7).

Referring to claim 20 Ellingosn as modified shows a means to digitize, store, and visualize the measurements made by said detector assembly (figure 1 Ref 48).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ellingson (5689332) in view of Guy (3633212).

Guy shows an intensity that is multiplied by a factor compensating for attenuation of light (column 4 lines 25-40). It would have been obvious to modify Ellingson to include an intensity factor multiplication taught by Guy because this is common when light is reflected from a surface that causes attenuation and the actual amplitude of the light is necessary.



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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luke D. Ratcliffe whose telephone number is 571-272-3110. The examiner can normally be reached on 8:00-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on 571-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LDR

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